



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/717,138	11/22/2000	Shunpei Yamazaki	0756-2232	2865
31780	7590	08/06/2004	EXAMINER	
ERIC ROBINSON PMB 955 21010 SOUTHBANK ST. POTOMAC FALLS, VA 20165			AKKAPEDDI, PRASAD R	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/717,138

Applicant(s)

YAMAZAKI ET AL.

Examiner

Prasad R Akkapeddi

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,4,7,8,77-84,88-93,97-100,108-114,116,118,120 and 122 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

Continuation of Disposition of Claims: Claims pending in the application are  
3,4,7,8,11,12,16,17,20,21,25,26,29,30,34,35,38,39,43,44,47,48,52,53,56,57,61,62,65,66,70,71,74,75,77-100,108-  
114,116,118,120 and 122.

Continuation of Disposition of Claims: Claims withdrawn from consideration are  
11,12,16,17,20,21,25,26,29,30,34,35,38,39,43,44,47,48,52,53,56,57,61,62,65,66,70,71,74,75,85-87 and 94-96.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/03/2004 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3,4,7,8, 77-79, 97-100, 108-114, 116,118,120 and 122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa (U.S.Patent No. 6,195,143) and Colgan et al. (Colgan) (U.S.Patent No. 5,831,710) and further in view of Seiki et al. (Seiki) (JP-10-096955).

a. As to claims 3,4,7 and 8: Ogawa discloses a liquid crystal panel comprising: a first substrate (821) including a plurality of pixel electrodes (823), a second substrate (825) including a counter electrode (824), a liquid crystal (827), a micro-lens array (830) including a plurality of micro-lenses. Ogawa discloses that the first substrate faces the second substrate through the plurality of pixel

electrodes, the counter electrode, the liquid crystal (Fig. 3) and the micro-lens array is provided on a surface of the second substrate (825), the surface being opposite to a surface that faces the first substrate (821). Ogawa also discloses that the plurality of lenses (830) are provided on one-on-one basis with respect to the plurality of pixels (823), see Fig. 6 and (col. 8, lines 63-67), as recited in the instant claim 8.

Although, in Fig. 6 Ogawa shows the end gap holding member (not numbered), Ogawa does not explicitly disclose the gap holding members in the text or does he disclose that the gap holding members are formed by etching an insulating film.

Colgan on the other hand, in disclosing a liquid crystal display, discloses gap- holding members (24) that are circular column shape and tapered, and also discloses that these members are formed by etching an insulating material (col. 3, lines 59-65).

As to the newly added limitation in claims 3, 4, 7 and 8: Neither Ogawa nor Colgan disclose that the gap holding members are selectively formed over contact holes where the plurality of pixel electrodes are connected with wirings.

Seiki in disclosing a liquid crystal display device, discloses column-like spacers (26) (i.e., gap holding members) are formed over the contact holes (25) where the plurality of pixel electrodes (23) are connected with electrically connected (page 20, lines 29-32) and (drawing 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members over the contact holes to raise the numerical aperture of the pixel, to maintain the gap uniform between the substrates, raise the light transmittance and to offer a liquid crystal display with good display quality (page 5, lines 12-33).

b. As to claims 77-79 and 97-100: Ogawa discloses a liquid crystal projector (Fig. 10D) comprising a white light source (110), splitting means (200) for splitting white light emitted from the white light source into a plurality of lights having different colors (R,G,B), a plurality of liquid crystal panels (250,252,254) respectively corresponding to the plurality of lights; first optical means (120) for irradiating the plurality of lights to the plurality of corresponding liquid crystal panels; and second optical means (270) for condensing a plurality of transmitted lights transmitted through the plurality of liquid crystal panels, wherein: the plurality of liquid crystal panels includes a first substrate (821), a second substrate (825), the plurality of lights are irradiated from a side of the second substrate (825) to the liquid crystal panel, a pixel portion including a plurality of pixels (823) is provided on the first substrate (821), each of the plurality of pixels includes a pixel electrode (823) and a thin film transistor (822) connected to the pixel electrode, a micro-lens array (830) is provided at a side of the second substrate (825). Ogawa also discloses that the plurality of lenses (830) are provided on one-on-one basis with respect to the plurality of pixels (823), see Fig. 6 and (col. 8, lines 63-67), as recited in the instant claims 78, 79 and 100.

Although, in Fig. 6 Ogawa shows the end gap holding member (not numbered), Ogawa does not explicitly disclose the gap holding members in the text or does he disclose that the gap holding members are formed by etching an insulating film.

Colgan on the other hand, in disclosing a liquid crystal display, discloses gap- holding members (24) and also discloses that these members are formed by etching an insulating material (col. 3, lines 59-65).

As to the newly added limitation in 77-79 and 97-100: Neither Ogawa nor Colgan disclose that the gap holding members are selectively formed over contact holes where the plurality of pixel electrodes are connected with wirings.

Seiki in disclosing a liquid crystal display device, discloses column-like spacers (26) (i.e., gap holding members) are formed over the contact holes (25) where the plurality of pixel electrodes (23) are connected with electrically connected (page 20, lines 29-32) and (drawing 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members over the contact holes to raise the numerical aperture of the pixel, to maintain the gap uniform between the substrates, raise the light transmittance and to offer a liquid crystal display with good display quality (page 5, lines 12-33).

c. As to claims 108-114, 116,118,120 and 122: Ogawa does not disclose that the plurality of gap holding members are arranged with a constant interval.

Colgan discloses the constant interval of the plurality of gap holding members (Fig. 2).

4. Claims 80-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa, Colgan and Seiki as applied to claims 78 and 79 above, and further in view of Hirakata et al. (Hirakata) (U.S.Patent No. 5,982,471).

As to claims 80-81: Ogawa discloses a liquid crystal projector with a liquid crystal panel. Ogawa, Colgan or Seiki do not go in to the details of the TFT and active matrix panel itself.

Hirakata in disclosing a liquid crystal display discloses that the thin film transistor includes plurality of pixels (pixel region), a semiconductor film including a source region (310), a drain region (311) and a channel formation region (314) which are connected to the pixel electrodes and a plurality of gap holding members (402) provides over the contact portions.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members to provide less non-uniform cell gap (otherwise to provide uniform gap) and reduce poor electrical contacts within the display panel (col. 3, lines 17-24).



Art Unit: 2871

5. Claims 82-84, 88-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa, Colgan and Seiki as applied to claims 77, 78 and 79 above, and further in view of Shimuzu et al. (Shimuzu) (U.S. Patent No. 5,739,882).

Ogawa discloses a liquid crystal projector with a liquid crystal panel.

Ogawa does not go in to the details of the gap holding members. Colgan discloses that the gap holding members (24) are circular column shape but does not disclose that the gap holding members are made from epoxy resin or UV curable resin.

Shimuzu in disclosing a LCD polymerized spacer discloses that the spacers (gap holding members) have a column shape (17) and are made from UV curable epoxy resin (col.2, lines 39-55).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members to provide the gap holding members made from a resin material such that they do not change the state of the liquid crystal orientation (col. 2, lines 1-6) and further by using such polymerized column spacers, light shielding film can be eliminated from the liquid crystal panel (col.16, lines 48-59).

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 3,4,7,8, 77-79 and 97-100 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2871

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 571-272-2285. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

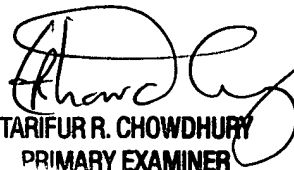
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*PRA*

\*\*\*

Prasad R Akkapeddi, Ph.D  
Examiner  
Art Unit 2871

  
TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER